Marble Launcher Projectile Lab

Procedure

Briefly, but completely, describe the procedure for this lab – and include a labeled sketch.

Data $\Delta y =$_____ $v =$ _____ $\Delta y =$_____

Horizontal		Angle						
v	t	θ	Δx_1	Δx_2	Δx_3	Δx_4	Δx_5	Δx_{avg}

Graphs

Plot Δx_{avg} vs θ. Carefully draw a best-fits *curve*, but do not calculate any equations.

Questions

1) For the horizontal launch, the time should be independent of the initial velocity. First explain why this is true, then whether or not your experimental data supports this fact.

2) Average the times for the horizontal launch part. Now use Δy to determine the theoretical value for the time. Using the theoretical value as the accepted value, find the percent error for your average time. Show all of this work.

3) To the nearest degree, what angle maximized the range of the marble? Use your data and your graph to support your conclusion.

4) Use the v and Δy from the angle launch to determine the theoretical range for the angle you put as your answer in #3. Show your work, including all equations used.

5) Using your answer in #4 as the accepted value, find the percent error for Δx_{avg} for the maximum angle only.

Error Analysis

Thoroughly explain what the main sources of error are for this lab, and how you would correct them.